

West Covina Service Group Turns HP3000 Dead-End into a .NET Superhighway

Withdrawal of support for the HP3000 put the West Covina Service Group (WCSG) in an awkward position as the platform relied upon by most of its agencies was clearly not going anywhere. With the help of Fujitsu's NetCOBOL for .NET, WCSG has successfully moved the first of many applications to Microsoft's .NET platform putting them in a leading edge environment that promises to speed current and future developments. A combination of preserving existing COBOL codes and writing their own utilities for taking ViewPlus screen definitions into GUI screens helped WCSG make a fast, smooth transition using a tight-knit team.

Profile

WCSG is an enterprise division of West Covina that is part of the West Covina Police Department. It provides software solutions to public safety agencies throughout California and Nevada. Their software solutions include Computer Aided Dispatch, E911 interfaces (including phase 2 Cellular), Records Management, Crime Analysis, Detective Caseload Management, Mobile Computers, and interfaces to various Federal, State, and County databases.

WCSG was able to provide cost-effective solutions to these agencies using software based on the HP3000 using COBOL and the TurboImage database. Vern Morton, software development manager for WCSG described the group's perspective on the HP3000: "We kid around referring to the HP3000 as a 1962 Mack dump truck – it ain't pretty, but it moves a lot of data." The applications now consist of thousands of COBOL programs amounting to millions of lines of code.

Customer Profile

West Covina Service Group is a service division of West Covina Police Department. It provides software solutions to public safety agencies throughout California and Nevada.

Business Situation

Applications resided on the HP3000 that provided a cost-effective and satisfactory solution while supported. Withdrawal of support by HP forced consideration of other options.

Solution

Migrate to the .NET Framework using Fujitsu Software's NetCOBOL for .NET and in-house created utilities.

Benefits

- Applications no longer limited by an ageing technology
- Not bound to a single vendor for hardware and systems software
- Valuable COBOL investment preserved
- Positive long-term outlook

Software and Services

NetCOBOL for .NET Visual Studio .NET
Microsoft SQL Server Microsoft C#

Initial Hardware Configuration

2-way Web server
4-way Application server
4-way Database server

Business Situation

For over 20 years WCSG has developed a comprehensive range of applications supporting their member agencies, all based on the HP3000. Although there were signs that the HP3000 was falling behind the technology leaders, it continued to provide adequate power at a reasonable price and interfaces that delivered the required functionality and usability. Had HP not withdrawn support for the HP3000 it is likely that WCSG would have remained on that platform for the foreseeable future.

However, at the end of 2001 HP announced that the "end of life" for the HP3000 would come at the end of 2006, so it became clear that the long-term base for WCSG's applications had to be reviewed. Key criteria for the evaluation of options for the future were:

- Continuation of all current services with as little disruption to the users as possible.
- Cost of transition should be manageable and within preset guidelines
- Cost of new platform should be competitive (it was likely that moving to a more modern architecture would increase the cost compared to the HP3000, but any new system had to compete well price-wise in the market)
- Solution should have good prospects of supporting the applications for at least the next 10 years
- Avoid solutions that would lock WCSG into a single vendor for both hardware and software, and preferably provide multiple, competitive options for both
- Have good access to the latest technologies
- Solution had to be proven viable early in 2005 and be capable of bringing all applications off the HP3000 by December 2006.

Solution

Solutions Considered

WCSG approached the situation with an open mind, checking out most possibilities including:

- Purchasing new software on a new platform, going for packaged or 3rd party solutions, rather than the current in-house code
- Rewriting the software on a new platform
- Staying on the HP3000 by working with companies willing to take over HP's maintenance role
- Various solutions for migrating the COBOL code to a new platform by using COBOL products available on that platform

Solution Chosen

By the final selection round, the first three solution options above had been ruled out:

- No set of solutions available from other vendors quite matched what WCSG provided; the changes in interfaces and working methods would have too great an impact on the users; and the effort in migrating past data to the new products threatened to be as big an effort as any other migration.
- Despite the efficiencies of modern development environments, a software rewrite was looking too expensive, too long and too risky.
- And, although staying on the HP3000 was the least disruptive and cheapest option in the short-term, the long-term risks of support fading away and the limitations of staying on a stagnant environment made this option unattractive.

Preserving the existing COBOL code with all the embedded process/business rules developed over the years was looking promising as several COBOL compiler vendors provided reasonable levels of compatibility and WCSG could see that either 3rd party packages or in-house solutions could migrate the proprietary TurboImage data and ViewPlus screens. This boiled the main choice down to one of platform and COBOL vendor.

Microsoft's .NET Framework was selected because of the following attributes:

- It runs on commodity hardware, providing a wide selection of vendors, price points and features.
- Internet/intranet based architectures are the way of the future, providing the greatest promise of access to new solutions and technologies, with the .NET Framework clearly playing a strong enabling role.
- Visual Studio's development environment was attractive

NetCOBOL for .NET provided the necessary support of and integration with the .NET Framework and didn't carry the burden of runtime license fees often required by other COBOL vendors.

Summarizing the choice, Morton explains, "We selected .NET and NetCOBOL, because we have a very large investment in applications that work very well, and could be enhanced with new features. Moving to .NET allows us to build on what we have and expand to areas that were previously out-of-range – actually opening up a whole new world. Since we did not have to spend resources re-writing software, we have been able to move much more quickly."

System Architecture

The final architecture and hardware specifications to be used when all systems have been migrated have yet to be determined. The current direction is to scale out on the front-end Web servers and application servers and scale up using a clustered, higher-end, 64-bit configuration for the database servers, possibly connected to a SAN.

The application architecture is sufficiently flexible that it will work with either scale-up or scale-out models. Final decisions on the hardware architecture will be based on the experiences gained from the first migrated applications and may depend on the features and pricing available in the latter stages of the roll out.

WCSG believes that the rapid advance in server power, and the competitive pricing of even higher-end servers, means that a decision on hardware architecture need not be permanent. By taking advantage of standard hardware replacement cycles, or redeploying hardware to other purposes, scale-out portions can be transitioned to scaled-up machines or vice-versa. Whether pricing or performance suggests a different strategy in the future, WCSG will be in a position to move in that direction.

Performing the Migration

The migration process comprised four main blocks of activity:

- Migrate the COBOL code
- Migrate the screens
- Migrate the data
- Perform extensive "burn-in" testing

Of these, the most challenging was to migrate the interfaces as these used HP's proprietary ViewPlus utility. Although some packages were available for performing this migration, WCSG wanted to convert from character to GUI screens when making the move, so that the applications were ready to take advantage of the new environment and wouldn't need another "convert to GUI" effort later on. WCSG determined the best solution was to rewrite the most performance critical interfaces, those in the computer aided dispatch system, using C#, and to create their own utility for converting the rest of the interfaces into GUI WebForms (ASP.NET pages).

A service company, experienced in TurboImage data migrations, was used to help speed the data migration effort. "We designed our databases to meet many of the criteria for normalization, before 'normal' databases existed," states Morton. "This allowed for a very easy transition." There were some difference in the philosophies of TurboImage and Microsoft SQL Server, but on the whole those worked to the new environment's favor, with a number of processes moved into database services, decreasing network traffic.

Migrating COBOL to COBOL was a straightforward transition for the team who were already very familiar with the code.

As with any migration effort, there was going to be little tolerance for errors in the new application so the group performed extensive testing by the developers and support personnel before any code was released to the end users. The testing included identifying and resolving any problems that were affecting performance and recognizing issues that might affect the users, such as differences in the manner of

working with the original screens and the new IE screens (for example, IE doesn't support type ahead across pages). These differences were noted for user training in the transition.

Following this strategy, six programmers and two support personnel were able to migrate over 1000 programs (over 1 million lines of code) in less than 12 months. Good preparation and planning, and focused execution clearly paid off as Morton observes, "By and large, the entire process went much smoother than we had expected."

Benefits

With the West Covina's applications now in production, WCSG sees the following benefits of choosing NetCOBOL for .NET:

- A migration strategy in place that will work for the other agencies' applications that need to come off the HP3000
- Easy integration of pieces written using different languages: C# and COBOL
- An exciting range of new possibilities
- They are no longer dependent on a single vendor for hardware and systems software.

Next Steps

All WCSG's client agencies use the same set of applications – they just have different sets of data and, in a few cases, different physical HP3000 boxes. By the end of 2005 WCSG will have migrated a second agency and expects to have the migration process sufficiently well refined that all the other agencies can be migrated during 2006.

Thereafter WCSG looks forward to opening up the throttle, enjoying the new world of opportunities accessible to them from the .NET superhighway.



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